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COMPARING PLATE WASTE AND LIKINGS OF PACKED LUNCH AND SCHOOL LUNCH BASED ON THE NEW NORDIC DIET

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Background and Objectives

The OPUS School Meal Study is a school-based intervention study testing the health effects of the New Nordic Diet (NND) based on sustainable food items native to the Nordic region in amounts close to the Official Danish Dietary Guidelines. One of the principles of the New Nordic Diet (NND) is to be environmentally friendly. Therefore minimizing edible plate waste is important because food wasted affects not only the cost of the meal but also the climate footprint The objective was to compare edible plate waste and self-reported food preferences (likings) between packed lunch from home and school lunch based on the New Nordic Diet (NND).

Methods

187 children (8-11y) at two schools were assigned to this study. In two 3-month periods 3rd and 4th grade children from selected municipal schools received school meals based on the NND and their usual packed lunch (control) in random order. Edible plate waste was measured by weighing individually meals for 5 consecutive days before and after lunch at the end of each dietary period. Self-reported smiley ratings from a web-based dietary assessment software for children were compared to edible plate waste. The data were modelled in two steps, a generalised linear mixed model was fitted for the probability of waste/no waste, and secondly a linear mixed model for positive waste data was fitted.

Table. Results from three linear mixed models for the effect of NND on edible plate waste (> 5 g) adjusting for school, gender, year group, hold education and dietary period for children with edible plate waste.

	Estimate (95% CI)	Test for no effect
Model 1 (N meals =1055)		
NND	1.06 (0.94; 1.19)	0.3506
Packed lunch	1	
Model 2 (N=1055)		
Soup	1.36 (1.15; 1.60)	<.0001
Meat	1.01 (0.85; 1.20)	
Vegetarian and cake	1.23 (1.04; 1.45)	
Fish	0.82 (0.69; 0.97)	
Buffet	0.91 (0.77; 1.08)	
Packed lunch	1	
Model 3 (N=902)		
NND	1.01 (0.89; 1.15)	0.8568
Packed lunch	1	
Lunch rating: Really bad / bad	1.69 (1.29; 2.21)	<.0001
Lunch rating: Okay	1.33 (1.12; 1.59)	
Lunch rating: Good	1.05 (0.92; 1.21)	
Lunch rating: Really good	1	

Model 1: Initial model for the effect of NND. Model 2: taking the menu into account. Model 3: adjusting for liking

Results

On average the plate waste was 28% when eating NND compared to 18% when eating packed lunch. The mean edible plate waste was 88 g (SD: 80) for NND and 43 g (SD: 67) for packed lunch when including all school lunches (N=1558). The odds for leaving edible plate waste was 11 times higher for NND than for packed lunch ($P < 0.0001$). The edible plate waste differed according to the menu ($P < 0.0001$) (see table). Self-reported lunch likings were negatively associated with edible plate waste ($P < 0.0001$) - a low rating of liking was associated with more plate waste.

Conclusions

The odds of having edible plate waste were significantly higher for NND meals compared to packed lunch. Strategies to reduce plate waste and getting children to like and eat a nutritious school meal are needed not only from an environmental and economic point of view but also from an educational point of view.

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